

Jimmie showed ridges as follows :—

Right hand	{	1st digit none.
		2nd ,, oblique.
		3rd ,, transverse at base of digit.
		4th ,, " " " " " "
		5th ,, nearly longitudinal. " "
Left hand	{	1st digit none.
		2nd ,, oblique.
		3rd ,, " "
		4th ,, " "
		5th ,, none.

In these three specimens ridges were absent from the corresponding surfaces on the feet.

The well-defined longitudinal direction of the ridges in *Mickie* is worth notice. It must be remembered in this connection that a Chimpanzee walks with the extensor surfaces of the phalanges touching the ground and the digits turned inwards, so that their long axes are at right angles to the line of progression of the animal, and accordingly the ridges of this part also occupy the same relative position. There is no correlation in this instance between the act of prehension and the direction of the ridges, though it agrees closely with the general rule which obtains in so many regions, that the ridges lie at right angles to the line of incidence of the predominating pressure on the part.

The following papers were read :—

1. Some Observations on the Field Natural History of the Lion. By Capt. RICHARD CRAWSHAY, F.Z.S.

[Received June 10, 1904.]

In offering these observations I wish it understood at the outset that I do not pose as a great lion-hunter, nor as having made lion-hunting a special pursuit, but speak merely as one who, during a period covering at intervals some seventeen years of travel and residence in Central Africa, has had many experiences with Lions.

From what I have read, and still more from the opinions I hear expressed from time to time, prevailing impressions seem so often at variance with my own observations that I have thought it worth while to record these latter.

It has always seemed to me that, though much has been written respecting the habits of the Lion in his natural state, a great portion of it is more fiction than fact: this, at least, is my experience. For one thing, the common opinion of the Lion being an animal of almost exclusively nocturnal habit—rarely or never seen in the

daytime unless roused from his lair in the gloom of some dense clump of bush or reed-bed—is quite erroneous. It is the fact that Lions are *heard* very much more at night than in daytime; nevertheless they are largely diurnal as well, though usually silent.

I have heard Lions roaring at noon on one or two occasions, and I have many times heard them as late as an hour or more after sunrise, and as early in the evening as an hour or more before sunset. The usual time is at sunset and a little after, and more especially about dawn in the early morning and thence onwards until broad daylight. I have *seen* Lions at all times of day, under all sorts of conditions, in all sorts of country, in all sorts of weather from misty rain to the hottest noonday sun of the tropics.

It is certainly not my experience that the Lion's habit is to hide himself in dark cover in the daytime—far from it. Other circumstances being equal, he likes open country and sunlight, and goes about and lies out in it freely, nothing being more to his liking than some coign of vantage commanding a view of the neighbourhood, where he can stretch himself out and survey the prospect. I have seen a Lioness and three cubs lying out on a river sand-spit in Henga in the full glare of the early afternoon tropical sun, stretched out on her belly, with her cubs crawling about her back and neck and tumbling over on to the sand. On another occasion about 10 A.M., also in Henga, I saw a Lioness sitting up on her haunches on a flat-topped ant-hill, watching and listening to my men talking and laughing as they were skinning an Impala shot half an hour previously.

The same instant as I made her out and levelled my glasses on her at a distance of some 300 yards, she slunk down behind the ant-hill—melting away, as it were, in the endeavour to make her movement as unnoticeable as possible.

I have seen a Lioness crossing the bare scorching lava-covered plain intervening between the East-Africa and Uganda Protectorates in the fierce heat of noon at midsummer, with the heat radiating in lambent tongues from the ground, giving her the appearance of being enveloped in fire.

Nothing had disturbed her, as this country was uninhabited by man; she was making her way to the water.

On another occasion I saw three half-grown cubs near the same spot in the early afternoon, in the hottest sunlight, playing about in the open on the banks of the stream.

Once, in Henga, I came across a troupe of five Lions on the move at noonday. It had been raining about an hour before, but the sun was then out in all its power of midsummer, as they crossed from open country to go into the scrub on the banks of the Lunyina River.

In Henga, in 1893, about an hour after sunrise in the hottest time in all the year, a full-grown dark-maned Lion passed down the valley below me following a game-track at a long striding walk, throwing up his head and roaring at intervals as he went,

making daytime hideous and stampeding the game in ridiculous fashion. Hartebeestes were sneezing, Reedbuck whistling, and herds of Zebra thundering about all over the place. I was actually stalking him at an angle to cut him off, when the late Surgeon McKay fired at another Lion a few hundred yards lower down the river, killing his first Lion and spoiling my chance.

In 1893 I had a curious experience with a Lion—also in Henga,—which, for aught I know, may have occurred to me oftener without my having been made aware of it. In stalking two old bull Hartebeestes up a slope in country timbered sparsely with sapling trees and bushes, I passed within some 20 paces of a Lion lying on the bare burned ground in the shade of a sapling without knowing it at the time. On my return from shooting both Hartebeestes, one of my men followed me and told me, pointing out the Lion lying under the tree.

On setting out to stalk the Hartebeestes, I left my two gun-bearers sitting on the steep slope on the other side of the stream, and myself descended to cross the stream and stalk my way up the opposite slope within easy view of the men. What first drew their attention to the Lion was his moving his head as I passed him all intent on my stalk, looking neither to my right nor left.

According to my men, I passed within 20 paces of him, to windward, nothing whatever intervening between us but the bare fire-swept ground. He did not catch my eye as he lay in a black patch of shadow—so black that when the man afterwards pointed him out to me from above and not in relief, I could not make him out. As I passed, he lay placidly where he was, merely raising and lowering his head—like a dog winding game—as he winded me. Had my eye happened to catch his, he would have behaved otherwise, no doubt; he would either have made a demonstration to put me to flight, or have retreated under protest, grunting, as Lions usually do.

Another popular idea of the Lion is that he becomes a man-eater only in extreme old age from force of circumstances. I do not agree with this at all. I believe rather that he learns this in the first instance more often under the impulse of hunger or passing caprice than of failing strength, and having thus overcome the natural repugnance and instinctive fear which all the lower animals have for man, finds in him an easy victim and henceforth constitutes him his special prey.

In evolving this habit Lions also evolve *extraordinary* cunning not primarily their own. In man they recognise a creature of higher intelligence than theirs, and pit themselves to meet this. What they seem to become aware of is that, if they are to overcome man, they must take him at a complete disadvantage—that unless they do so he is their master against whom mere force as applied to other creatures will not prevail.

From contact with man they become extraordinarily conversant with his habits, using this knowledge against him. Nevertheless, though they become extraordinarily cunning in plans of attack,

they also become abnormally cowardly should such plans fail. I have known remarkable instances of this.

Another point on which I cannot endorse the general theory is that of the Lion being a fastidious feeder, eating almost exclusively his own kills, his prey being the larger mammals—buffalo, zebra, and antelope. I have not found this to be so as regards his being a fastidious feeder. In my experience Lions feed freely on carrion—often far gone in putrefaction. Sometimes also they prey on such very small game as the smaller rodents.

Mr. Selous has it on record how on one occasion a Lion ate the skin of a Sable Antelope treated with arsenical soap for preservation as a natural-history specimen. Nothing so remarkable as this has occurred within my personal knowledge. It is probably an almost isolated case. As an instance of the Lion's primary fear of man and also of his eating carrion, I remember a case to illustrate this which occurred to me on the western shores of Lake Nyasa in 1885. I had shot two Elephants in the afternoon, and after following up the herd with no further results than to have to shoot a calf practically in self-defence, I returned some time after dusk to where I had killed my first Elephant, and there slept under the belly and between the legs of the animal to be in readiness to cut out the tusks in the morning. In those days, in that country, Lions gave little anxiety on the score of being man-eaters; therefore no precautions were taken to guard against them, either in keeping watch or burning large fires. Had I had some of my experiences of later years I could never have slept as I did then—lying down anywhere and never keeping a watch or burning a fire except to cook. Nothing occurred during this particular night to disturb my rest. It was a surprise, however, when morning light came, to find on the loose soft ashes of the grass burned the day before that a troop of Lions had circled round, desirous of feeding on the carcase, but deterred by the presence of man.

The following night, after the tusks had been cut out and I had moved camp to a point about a mile away, they returned and fed on what remained of the flesh, then putrid from exposure to the sun.

On the Lower Shiri Plains, British Central Africa, in 1885, I shot a very fine Lion whose stomach was full of Elephant's trunk—an Elephant killed by natives and cut up by them, the knife-cuts in the flesh and hide being at once noticeable. He had made a huge and rapid meal—chunks of solid flesh, with pieces of the hide attached, weighing several lbs. each, had been bolted whole. He was a very fine Lion, in splendid condition and in the prime of life, as could be seen from the skull.

As regards Lions preying on other game than large mammals, I have already mentioned to this Society (P. Z. S. 1904, vol. ii. p. 144) an interesting case of a Lion which I believe to have preyed on porcupines.

In 'Mammals, Living and Extinct,' Sir William Flower remarked that probably Lions paired for life: this is so, I think.

What induces me to this belief is the inconsolable behaviour of the remaining one of a pair should the other be killed, no matter whether the survivor be the male or female. It is really touching. I shall never forget the moaning sobs of the mate of the Lion killed N.W. of Kibwezi during the entire succeeding night, nor the continuous melancholy roaring of the mate of the Lioness killed in Henga in December 1893.

2. On some Nudibranchs from East Africa and Zanzibar.
Part VI. By Sir C. ELIOT, K.C.M.G., late H.M. Commissioner for the East African Protectorate, F.Z.S.

[Received October 6, 1904.]

(Plates XVI. & XVII.*)

This paper contains an account of the following Nudibranchs collected in Zanzibar or East Africa:—

1. *Orodoris striata*, sp. n.
2. *Hexabranchius lacer* Cuv., varieties *faustus*, *marginatus*, and *moebii*.
3. *Doridopsis tuberculosa* (Q. & G.).
4. *D. spiculata* Bgh.
5. *D. pudibunda* Bgh.
6. *D. nigra* (Stimpson).
7. *D. denisoni* (Angas).
8. *D. clavulata* A. & H.
9. *D. rubra* (Kelaart).
10. *Phyllidia varicosa* Lamarek.
11. *Ph. nobilis* Bgh.
12. „ „ var. *rotunda*, nov.
13. *Ph. pustulosa* (Cuv.).
14. *Phyllidiopsis cardinalis* Bgh.
15. *Doto africana*, sp. n.
16. *Fiona?* *pinnata* (Eschsch.).
17. *Hervia lineata*, sp. n.
18. *Phidiana tenuis*, sp. n.
19. *Facelina lineata*, sp. n.
20. *Phylloidesmium hyalinum* Ehr.
21. *Stiliger varians*, sp. n.
22. *St. irregularis*, sp. n.
23. *Phyllobranchus prasinus* Bgh.
24. *Cyerce elegans* Bgh.
25. *Placobranchus ocellatus* Van Hass.
26. *Elysia faustula* Bgh.
27. *E. marginata* Pse.
28. *E. dubia*, sp. n.

It is very likely that some of the smaller forms are immature,

* For explanation of the Plates, see p. 297.